

REMARKS

In the Office Action, the Examiner rejected claims 1-13. By this paper, Applicants cancelled claim 11, added new claims 47-78, and amended claims 1-3, 6, 8, 12, and 13 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 1-10, 12, 13, and 47-78 will be pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

New Claims

New claims 47-78 are generally directed to the production of polyolefin in a slurry reactor, and to a coolant system associated with the reactor. The coolant system incorporates a novel coolant valve having a bilinear flow characteristic. Support for the new claims can be found in the present specification, for example, at pages 4, 7-9, and 11-16 and Figs. 1-4

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 1, 11, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Anderson et al (US 6,165,418) in view of Hashizume et al. (US 6,789,617). In addition, the Examiner rejected claims 1-10, 12 and 13 under 35 U.S.C. §

103(a) as being unpatentable over Arens et al (US 3,676,653) in view of Hashizume et al. (US 6,789,617).

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish a *prima facie* case, the Examiner must show that the combination includes *all* of the claimed elements, and also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

Deficiencies of the Rejections

Independent claim 1 has been amended to recite a *loop polyolefin* reactor. The Examiner relied on Anderson and Arens to teach the polyolefin reactor. In contrast, these two references (nor the third reference, Hashizume) by the Examiner teach or suggest a *loop polyolefin* reactor.

For example, while Anderson teaches the production of polyolefin in a polymerization reactor, the reference is absolutely devoid of the teaching of a *loop* reactor. *See, e.g.*, Anderson, col. 1, lines 13-26. Further, Applicants believe that Anderson is directed to gas-phase reactors, and as prior art, has clearly has *not* enabled liquid-phase reactors. *See, e.g., id.*, col. 1, lines 25-65; col. 2, lines 49-55; *see also In re*

Hoeksema, 3999 F.2d 269, 158 U.S.P.Q. 596 (C.C.P.A. 1968); *Elan Pharm., Inc. v. Mayo Foundation for Medical and Education Research*, 346 F.3d 1051, 1054, 68 U.S.P.Q.2d 1373, 1376 (Fed. Cir. 2003). (explaining that mere naming or description of the subject matter in the reference is insufficient).

To be sure, the coolant system taught by Anderson, which is based on compression of (e.g., via compressors 12 or 33) of recycle gas from a gas phase reactor, would not work in a liquid-phase reactor, whether a loop bulk reactor, loop slurry reactor, or other types of liquid slurry reactors. *See, e.g., id.*, Figs. 1 and 2. The reference is absolutely devoid of jacketed systems typically employed by liquid-phase reactors. Moreover, with regard to certain new claims added in this paper, while Anderson may disclose cascade control, which is common, Applicants believe, the heat transfer involved in cooling of gas phase reactors to be radically different than that employed in jacketed liquid-phase reactor systems. *See, e.g., id.*, col. 1, line 66 – col. 2, line 15 (“A common temperature control strategy for polymerization reactors consists of cascading the reactor temperature to the coolant temperature in a 2-level control scheme.”).

With regard to Arens, not only does the reference not teach a *loop* reactor, it does not teach a *polyolefin* reactor. Instead, Arens teaches the production of *polyphenylene sulfide* in a *tank* reactor. *See, e.g., Arens*, col. 1, lines 40-44; Fig. 1. Further, Arens teaches a batch reactor which is plainly inapposite the continuous systems disclosed and claimed in the present application. Lastly, while Arens may also teach a common cascade

control scheme, the Arens heating/cooling system simply would not work in a continuous system or in a loop polyolefin reactor system, due in part at least to the radical differences in polymerization, heating/cooling requirements, overall control of the reactor, and so on.

The Examiner relied on Hashizume to teach a “multi” linear flow characteristic. *See* Office Action, pages 4-6. While Applicants do not necessarily agree with the Examiner that Hashizume teaches such a feature, Applicants respectfully remind the Examiner that claim 1 recites a “bilinear” flow characteristic, and not a “multi” flow characteristic.

Lastly, Applicants would like to briefly address the Examiner’s assertions that limitations in some of the present claims are “directed to manner of operating disclosed system” and that “neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim.” *See* Office Action, pages 6-7 (citing M.P.E.P. §§ 2114 and 2115). Applicants respectfully disagree with the Examiner’s characterization of the presently-claimed subject matter. Functional elements that impart structural characteristics or convey information about the arrangement of an apparatus/system, and so forth, should be considered, and do have patentable weight in apparatus/system claims. Indeed, regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in

which it is used. *See* M.P.E.P. § 2173.05(g); *In re Swinehart*, 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); *In re Schreiber*, 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997).

For these reasons, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

Conclusion

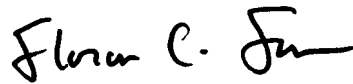
The Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Authorization for Extensions of Time and Payment of Fees

In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request thereof. The Commissioner is authorized to charge fees for any extensions of time, or for any other reason needed to advance prosecution of the present application, to Deposit Account No. 06-1315; Order No. 210546US00/FLE/RAR/FAR (CPCM:0010).

Respectfully submitted,

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